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ABSTRACT

Audiovisual aids and instructional media have advantages: they are of use in training, they permit self instruction, they allow widespread exposure to expert teachers. They also present difficulties: they are expensive, they require reorganization and careful selection of staff and equipment, they require decisions as to what programs to use or create. These points must all be considered in the decision about whether to use these aids and media. If the decision is favorable, other problems arise: integration of the media in the course sequence, choice of the specific medium, and its mode of employment. The uses of film and slide tapes must be carefully considered to determine how they can be of most use in helping the student to know and think. Bloom's "Taxonomy" is used as a way to consider this problem. (JK)

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Study Topic III

CRITERIA AND PLANNING FOR THE EMPLOYMENT OF AUDIO-VISUAL TRAINING

Lecture 7

"Didactic-methodological aspects of the use of medium"

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Criteria and Planning for the Use of Audio-visual Training

1. Fundamental Considerations on Audio-visual Aids

You have probably all experienced situations in which you have been compelled to improvise owing to a breakdown in some technical device you were using. Presence of mind and quick-wittedness have averted many an impending instructional disaster. If such breakdowns are of frequent occurrence, however, the participant tends to retain a negative impression of the course. Should not the trainer or course-leader therefore trust to his own methodological and didactic abilities rather than expose himself to the vagaries of technics?

The question is wrongly put. In spite of all technical shortcomings, there are already several valid reasons for deciding to make use of technical (audio-visual) aids, on principle. Before scrutinising these reasons, however, let us define the adjective "audio-visual" and the noun "audio-vision". As Freuler commented, it is simultaneously easy and difficult. Easy, if one confines oneself to the purely verbal sense. It then means the communication of a message in such a way that it is conveyed to both eye and ear simultaneously. Whether the visual stimulus is given by an object, a drawing, a symbol or a situation, and the acoustic one by "live" speech, music, sounds, or a recording, is, in principle, immaterial. But in actual practice, the term "audio-visual" in the narrower sense generally connotes the presentation of a message by means of technical apparatus. The activities involved in this, such as the preparation of effective series of slides, films, video-tapes, sound-tapes, etc., are also included under the heading of "audio-vision", as are also the various reproductive devices, from the ordinary projector up to combinations of various pieces of apparatus and controlplant. A "medium" in the modern sense of the term therefore consists of visual and acoustic reproductive devices, the "hardware" and instructional material, the "software".

Well, then, what reasons can one advance at this stage for the use of audio-visual aids? It is undeniable that in most spheres of economic and social life there is an ever-increasing need for further training and education. The number of potential trainees thus grows ever larger, while, on the other hand, the number of instructors (training-staff) increases at a much slower rate. If the resulting gap is to be closed, the capacity of instructional facilities must be expanded. Technical aids and media must be utilised. They can help to eliminate bottlenecks. In a business firm, it often occurs that some new state of affairs must be demonstrated to a large number of people as lucidly and expeditiously as possible, without the disruption of normal business life. In the Swiss PTT (the Post, Telephone and Telegram Services), for example, such situations accur frequently. I recall the occasion when Post Office front staff in the whole of Switzerland had to be familiarised with the new postage-rates obtaining from January 1st this year. And that, let it be noted, in three languages, with the additional complication of the intervening public holidays. The solution was found in the use of audio-visual material, which can be reproduced as often as desired without any alteration in the quality of the content.

The heavy professional commitments placed upon the course participants may well mean that new knowledge must be imparted during off-hours. Self-instruction is the only answer here. If this is to be effective, attractive and financially feasible, the use of audio-visual methods is, in my opinion, indispensable. The new conception of the Nova Park Hotel in Zürich is based on this realisation. It offers so-called Audio-vision Clubs, such as the Nova Manager Club for harrassed but further-education conscious gentlemen, who are desirous of combining business with pleasure.

It is, after all, quite often impossible to find persons who are experts in their fields and are, at the same time, capable of imparting their knowledge methodically and effectively to others. Only teamwork can be of any use here, with the avowed intention of conveying the results of the common efforts to the course participants in programmed form. Here, too, technical, audio-visual methods prove most fruitful.

There are, however, not only arguments in favour of the use of audio-visual methods. Those responsible for making the decision to utilise them are apprehensive above all about the consequences ensuing upon it.

Firstly, it is clear that the use of modern audio-visual aids requires the expenditure of large sums of money. It is, unfortunately, a question of an investment decision which cannot be taken on the basis of a clear-cut cost/efficiency calculation.

Secondly, it is necessary to take fairly sweeping organisational measures so that audio-visual methods may be rationally applied. The staff to use the equipment must be particularly carefully selected.

Thirdly, it is today extremely difficult to choose from the range of appliances on the market the ones which meet one's specific requirements. Advice from the manufacturer and above all from independent institutions will offer some help here.

Fourthly and finally, there is the question as to what audio-visual programmes, i.e., films, slide-shows, video-tapes, etc., are to be used. Where are they to be obtained? Can their contents be taken over in toto? Must new pictures be produced, new commentaries recorded, or will it even be necessary to fashion everything anew to one's own requirements, i.e., do everything for oneself? The Swiss Life Insurance Offices, in a similar situation, decided to combine in producing their own training programmes.

Thus we see that for firms which possess no modern technical audio-visual aids, the first step in course-planning consists in convincing the decision-makers and pointing out to them the consequences of a positive decision. When the framework has been erected, we may proceed to the manifold problems of audio-vision in individual cases.

2. Criteria for the Use of Audio-visual Methods in Specific Cases

2.1 The Criterion of Didactic Method

The correct methodological and didactic approach is most difficult to determine. Various attempts are to be found in the relevant literature, but there is no comprehensive theory as yet. I shall here try to proceed from already formulated learning-objectives. I can, however, offer you no universally valid formula. You must work intuitively and, after some preliminary experience with the media, search for the best solution in each case. Besides your analytical faculties, creativity now also comes into play.

Integration of the Media in the Course Sequence (cf. Fig. 1)

The basic decision must be taken as to what role you intend to assign to the medium. You may regard a slide-series with commentary, films or video-tapes as auxiliaries in the planning of your course. They are then supplementary instruments at your disposal for the fulfilment of certain tasks that cannot be performed with traditional aids. You can, for example, use the video-tape to record the behavioral patterns of course-participants playing roles, which can later be shown in the presence of the actors themselves. A film may be used as the introduction to a course, or as the concluding summing-up. If media are used as auxiliaries, one must decide how they are to be integrated into the course sequence. Besides various bridging commentaries by the instructor, short slide-lectures of 5 - 10 minutes duration, or short films (variously called element-films, or single-concept films) may be employed. Single, one-theme video-tapes showing, for example, a single scene of role-playing, can also be inserted. The onus of the conveyal of information, however, remains with the instructor.

Presentation by means of audio-visual aids can be considerably increased in learning-effectiveness by the distribution of supplementary reading-material. The most important pictures can be handed out to the participants as working-materials. The commentary on a slide-show can be reproduced for them unabridged or in summary form. Finally, it is also possible to hand

Figure 1

Integration of the Media into Course-sequence

	Medium as Auxiliary with co-operation of instructor	Medium as Principal Source without co-operation of instructor
Single Medium	- short recorded slide-show (or slide-series with live commentary) or - single-concept Film or - single, one theme TV scene	Film, Slide-show, TV } in series
Mixed Media	Slide-show, Film, TV } and questionnaire working-sheets	Combination of Film, Slide-show, TV each with programmed book "Self-instruction"
	Medium as ancillary	Medium in the chief role

out questionnaires with multiplechoice answers as short tests, immediately after the presentation. All these measures are conducive to better memorisation of what has been learnt. Such a procedure might, somewhat loftily, be termed a mixed-media form of presentation.

In many cases it is feasible to assign the chief instructional role to the medium. It then assumes the chief burden of the imparting of information. For example, a member of the staff may, after a brief introduction, show a film which then serves as a basis for an ensuing discussion. Such a procedure might also be called an audio-visual case-method.

If the purveyors of "hardware" and "software" are to be believed, the bad old days when students and other so-called "brain-workers" sat up far into the night poring over books to quench their thirst for learning, will soon be over. Modern self-instruction is learning in play, supported - how else? - by audio-visual means. In the simplest form, it consists of programmed book instruction with films or picture-and-sound material. More elaborate systems work with so-called learning-machines, which eventually leads to computerised instruction.

The mixed-media system usually consists of a combination of film and/or a sound-and-picture show with printed material, a programme of one sort or another being responsible for the correct, methodical development of instruction.

For those wishing to produce their own "software", it is advisable to consider the various purposes to which it is to be put, from the very beginning. It is often possible at little additional expense to plan production in such a way that different versions can be turned out at the same time. It is, for example, perfectly feasible to co-ordinate several reels of educational film in such a way that, with an additional introduction and concluding summary, they form a complete film, a so-called "solo number", or that they can, on the other hand, be fitted into a programmed, mixed-media course of self-instruction. But we do not in this context intend to consider the problems of modern self-teaching.

Choice of the Specific Medium and its Mode of Employment

We intend to speak only of films and recorded slide-shows. Apart from the possibility of playing back recordings immediately, there is little to distinguish video-tape from film. As an experiment, I should like to proceed not from the contents, but from the learning-objectives. But it must be realised that to the cognitive learning-objectives, others from the affective sphere must now be added. We may suppose that audio-visual presentation, by appealing to the spectator's feelings, will help to make the absorption of information into an emotional experience. If this is successful, the learning-content will also be retained better. All of you can certainly remember some film or other that made a great impression on you years or even decades ago. Even though we refrain from formulating learning-objectives in the affective sphere, I should like to stress that it would in principle be quite possible to do so.

On the basis of Bloom's "Taxonomy", we can distinguish between the two great categories of "knowing" and "thinking" (the intellectual operations). Let us first consider the category of "knowing".

Every element within the category of "knowing" may contain examples of varying degrees of difficulty. Comprehension of the concept "the term of a sum", and its integration into the stock of existing knowledge, is relatively easy to achieve. But to comprehend the concept of "the apocalypse" in all its connotations for Mankind today, is a great deal more difficult. It is, after all, not a question of learning concepts by rote; their meaning must be impressed upon the mind. The concept of "the term of a sum" may be understood quite detachedly, whereas the concept of "the apocalypse" requires emotional involvement for its full comprehension.

The knowledge of classifications, criteria, methods and rules may also have simple and more complex aspects (cf. Fig. 2). The nature of the contents will to a great extent predetermine the form of both film and recorded slide-show. There are a number of possibilities. Both media are pre-eminently suited to the reproduction of reality. Trick-effects lend film an especially vivid means of expression. The use of these media for the elucidation of abstractions is another field in which their peculiar characteristics prove particularly advantageous.

Figure 2

Learning-objectives: Category "Knowledge" (cognitive)

	Example 1	Example 2
1) Knowledge of Concepts and Facts	"Term of a sum"	"Apocalypse"
2) Knowledge of Classifications	"Gaseous", "liquid"	Star of the first magnitude
3) Knowledge of Critera	"Warmth"	"General welfare of a nation"
4) Knowledge of Methods	"Addition"	"Creative thinking"
5) Knowledge of Rules and Regularities	"At 0 - 2° C precipitation takes the form of snow"	"The square of a negative quantity is always positive"

Figure 3

Employment of Media to Convey Information

	Film	Slide-show
Illustration by Reflection of Reality	Visual: Pictures from life - Capture of a continuous process - Tricks of fast and slow motion - Peripheral information through moving pictures Acoustic: Actual sound, perhaps commentary	Visual: Pictures from life - "Freezing" of a process - Selection of certain moments - Artificial stress on central information
Concretisation of Abstractions (e.g. concepts)	Visual: - Animation (trick cartoons) - Combination of abstract and real-life presentations (moving) Acoustic: - Commentary for factual/informative presentation - Sounds, music for affective approach	Visual: - Series of illustrations (stills)

Characteristics: Objective: Information-transfer
Method: Programmed learning-process

Basic attitude of course-participant: receptive

Demonstration and illustration always aim at the imparting of knowledge, in more or less programmed form. All that is demanded of the spectator is attention, so that he shall absorb the information offered.

Some examples will help you to understand these points better. A soberly informative recorded slide-show is to extend your knowledge of a few basic concepts of cybernetics. Then there will be an instructional film on .....
....., and finally a dynamic recorded slide-show on ..... .

And now, on the basis of what you have heard and the examples shown, we should like you to consider the following question: With which method, slide-show or film, may the learning-objectives in Fig. 2 best be attained? In the next five minutes, please write on a sheet of paper your views on as many as possible of the ten examples in the table.

We have yet to consider the learning-objectives of the second category of Bloom's scheme, that of "thinking", i.e., of the intellectual operations. We must not fall into the error of supposing that no intellectual operations take place in the category of "knowing". To simplify somewhat, one might say that knowledge is received and reproduced there. The learning-objectives of the second category simply consist of the more complex forms "application", "interpretation", "analysis", "synthesis" and "evaluation".

It will surely be obvious: audio-visual methods as used for mind-training can only provide initial impulses. The actual process of thought must be carried out by the spectator himself. Films and slide-shows are only the external cause, somewhat like a starting-signal, for an inward process taking place in the observer, which, one hopes, will lead him to an insight into the problem in question. Insight means understanding of interrelationships and the nature of the circumstances in any particular case. It makes possible the highest of all intellectual operations, that of evaluation or judgement (cf. Fig. 4).

Figure 4

Use of Media to Provoke Thought

Insight Through Audio-Visual Stimulus	Film and Recorded Slide-Show
	Visual:
	- Contrasts
	- Heightening
	- Trick
	Dramatic presentation: - Tension, provocativeness
	- One-sidedness
	Acoustic: - Commentary, original text, music, mixed

Characteristics: - Aim: To provoke thought
- Method: Visual presentation of problems

Basic attitude of Course-participant: Active

A film that provokes thought and encourages the spectator to reflect for himself is called a question-mark or motivation-film. It has a characteristic dramatic structure, since it is intended to arouse tension, provoke argument and define attitudes. In 1970, the American TV company NBC broadcast a programme on the underprivileged farm-workers in Florida. It was so skilfully and controversially produced that it caused repercussions even in the highest political circles. In conclusion, we shall now see a film of this kind entitled ..... .

If that was a good question-mark film, you will now feel an urge to discuss it. And not only the film, perhaps, but all you have heard so far. We shall therefore have a short break now, after which you will meet in your groups to discuss the form that your group-project is to take.